

SEQUENCE LISTING

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<120> HUMANIZED IMMUNOGLOBULIN REACTIVE WITH B7-2 MOLECULES AND
 METHODS OF TREATMENT THEREWITH

<130> 08702.0081-00000

<140> 09/249,011

<141> 1999-02-12

<160> 52

<170> PatentIn version 3.1

<210> 1

<211> 405

<212> DNA

<213> Murine anti-B7-2 heavy chain

<220>

<221> CDS

<222> (1)..(405)

<223>

<400> 1

atg ggt tgg aac tgt atc atc ttc ttt ctg gtt aca aca gct aca ggt
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Met	Gly	Trp	Asn	Cys	Ile	Ile	Phe	Phe	Leu	Val	Thr	Thr	Ala	Thr	Gly
1				5					10					15	

gtg cac tcc cag gtc cag ctg cag cag tct ggg cct gag ctg gtg agg
 96

Val	His	Ser	Gln	Val	Gln	Leu	Gln	Gln	Ser	Gly	Pro	Glu	Leu	Val	Arg
			20					25					30		

cct ggg gaa tca gtg aag att tcc tgc aag ggt tcc ggc tac aca ttc
144

Pro Gly Glu Ser Val Lys Ile Ser Cys Lys Gly Ser Gly Tyr Thr Phe
35 40 45

act gat tat gct ata cag tgg gtg aag cag agt cat gca aag agt cta
192

Thr Asp Tyr Ala Ile Gln Trp Val Lys Gln Ser His Ala Lys Ser Leu
50 55 60

gag tgg att gga gtt att aat att tac tat gat aat aca aac tac aac
240

Glu Trp Ile Gly Val Ile Asn Ile Tyr Tyr Asp Asn Thr Asn Tyr Asn
65 70 75 80

cag aag ttt aag ggc aag gcc aca atg act gta gac aaa tcc tcc agc
288

Gln Lys Phe Lys Gly Lys Ala Thr Met Thr Val Asp Lys Ser Ser Ser
85 90 95

aca gcc tat atg gaa ctt gcc aga ttg aca tct gag gat tct gcc atc
336

Thr Ala Tyr Met Glu Leu Ala Arg Leu Thr Ser Glu Asp Ser Ala Ile
100 105 110

tat tac tgt gca aga gcg gcc tgg tat atg gac tac tgg ggt caa gga
384

Tyr Tyr Cys Ala Arg Ala Ala Trp Tyr Met Asp Tyr Trp Gly Gln Gly
115 120 125

acc tca gtc acc gtc tcc tca
405

Thr Ser Val Thr Val Ser Ser
130 135

<210> 2

<211> 135

<212> PRT

<213> Murine anti-B7-2 heavy chain

<400> 2

Met Gly Trp Asn Cys Ile Ile Phe Phe Leu Val Thr Thr Ala Thr Gly
1 5 10 15

Val His Ser Gln Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Arg
20 25 30

Pro Gly Glu Ser Val Lys Ile Ser Cys Lys Gly Ser Gly Tyr Thr Phe
35 40 45

Thr Asp Tyr Ala Ile Gln Trp Val Lys Gln Ser His Ala Lys Ser Leu
50 55 60

Glu Trp Ile Gly Val Ile Asn Ile Tyr Tyr Asp Asn Thr Asn Tyr Asn
65 70 75 80

Gln Lys Phe Lys Gly Lys Ala Thr Met Thr Val Asp Lys Ser Ser Ser
85 90 95

Thr Ala Tyr Met Glu Leu Ala Arg Leu Thr Ser Glu Asp Ser Ala Ile
100 105 110

Tyr Tyr Cys Ala Arg Ala Ala Trp Tyr Met Asp Tyr Trp Gly Gln Gly
115 120 125

Thr Ser Val Thr Val Ser Ser
130 135

<210> 3
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<220>
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<222> (1)..(396)
<223>

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48
Met Asp Ser Gln Ala Gln Val Leu Ile Leu Leu Leu Leu Trp Val Ser
1 5 10 15

ggt acc tgt ggg gac att gtg ctg tca cag tct cca tcc tcc ctg gct
96

Gly Thr Cys Gly Asp Ile Val Leu Ser Gln Ser Pro Ser Ser Leu Ala
20 25 30

gtg tca gca gga gag aag gtc act atg agc tgc aaa tcc agt cag agt
144

Val Ser Ala Gly Glu Lys Val Thr Met Ser Cys Lys Ser Ser Gln Ser
35 40 45

ctg ctc aac agt aga acc cga gag aac tac ttg gct tgg tac cag cag
192

Leu Leu Asn Ser Arg Thr Arg Glu Asn Tyr Leu Ala Trp Tyr Gln Gln
50 55 60

aaa cca ggg cag tct cct aaa ctg ctg atc tac tgg gca tcc act agg
240

Lys Pro Gly Gln Ser Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg
65 70 75 80

gaa tct ggg gtc cct gat cgc ttc aca ggc agt gga tct ggg aca gat
288

Glu Ser Gly Val Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp
85 90 95

ttc act ctc acc atc agc agt gtg cag gct gaa gac ctg gca gtt tat
336

Phe Thr Leu Thr Ile Ser Ser Val Gln Ala Glu Asp Leu Ala Val Tyr
100 105 110

tac tgc acg caa tct tat aat ctt tac acg ttc gga ggg ggg acc aag
384

Tyr Cys Thr Gln Ser Tyr Asn Leu Tyr Thr Phe Gly Gly Gly Thr Lys
115 120 125

ctg gaa ata aaa
396

Leu Glu Ile Lys
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<212> PRT

<213> Murine anti-B7-2 light chain

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1 5 10 15

Gly Thr Cys Gly Asp Ile Val Leu Ser Gln Ser Pro Ser Ser Leu Ala
20 25 30

Val Ser Ala Gly Glu Lys Val Thr Met Ser Cys Lys Ser Ser Gln Ser
35 40 45

Leu Leu Asn Ser Arg Thr Arg Glu Asn Tyr Leu Ala Trp Tyr Gln Gln
50 55 60

Lys Pro Gly Gln Ser Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg
65 70 75 80

Glu Ser Gly Val Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp
85 90 95

Phe Thr Leu Thr Ile Ser Ser Val Gln Ala Glu Asp Leu Ala Val Tyr
100 105 110

Tyr Cys Thr Gln Ser Tyr Asn Leu Tyr Thr Phe Gly Gly Gly Thr Lys
115 120 125

Leu Glu Ile Lys
130

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<211> 405

<212> DNA

<213> Humanized murine anti-human B7-2 heavy chain

<220>

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<222> (1)..(405)

<223>

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48

Met Gly Trp Asn Cys Ile Ile Phe Phe Leu Val Thr Thr Ala Thr Gly
1 5 10 15

gtg cac tcc cag gtc cag ctg gtg cag tct ggg gct gag gtg aag aag
96

Val His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
20 25 30

cct ggg agc tca gtg aag gtg tcc tgc aaa gct tcc ggc tac aca ttc
144

Pro Gly Ser Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
35 40 45

act gat tat gct ata cag tgg gtg aga cag gct cct gga cag ggc ctc
192

Thr Asp Tyr Ala Ile Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
50 55 60

gag tgg att gga gtt att aat att tac tat gat aat aca aac tac aac
240

Glu Trp Ile Gly Val Ile Asn Ile Tyr Tyr Asp Asn Thr Asn Tyr Asn
65 70 75 80

cag aag ttt aag ggc aag gcc aca atg act gta gac aag tcg acg agc
288

Gln Lys Phe Lys Gly Lys Ala Thr Met Thr Val Asp Lys Ser Thr Ser
85 90 95

aca gcc tat atg gaa ctt agt tct ttg aga tct gag gat acg gcc gtt
336

Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
100 105 110

tat tac tgt gca aga gcg gcc tgg tat atg gac tac tgg ggt caa ggt
384

Tyr Tyr Cys Ala Arg Ala Ala Trp Tyr Met Asp Tyr Trp Gly Gln Gly
115 120 125

acc ctt gtc acc gtc tcc tca
405

Thr Leu Val Thr Val Ser Ser
130 135

<210> 6
<211> 135
<212> PRT
<213> Humanized murine anti-human B7-2 heavy chain

<400> 6

Met Gly Trp Asn Cys Ile Ile Phe Phe Leu Val Thr Thr Ala Thr Gly
1 5 10 15

Val His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
20 25 30

Pro Gly Ser Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
35 40 45

Thr Asp Tyr Ala Ile Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
50 55 60

Glu Trp Ile Gly Val Ile Asn Ile Tyr Tyr Asp Asn Thr Asn Tyr Asn
65 70 75 80

Gln Lys Phe Lys Gly Lys Ala Thr Met Thr Val Asp Lys Ser Thr Ser
85 90 95

Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
100 105 110

Tyr Tyr Cys Ala Arg Ala Ala Trp Tyr Met Asp Tyr Trp Gly Gln Gly
115 120 125

Thr Leu Val Thr Val Ser Ser
130 135

<210> 7
<211> 396
<212> DNA

<213> Humanized murine anti-human B7-2 light chain

<220>

<221> CDS

<222> (1)..(396)

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48

Met Asp Ser Gln Ala Gln Val Leu Ile Leu Leu Leu Trp Val Ser
1 5 10 15

ggc acc tgt ggg gac att gtg ctg aca cag tct cca gat tcc ctg gct
96

Gly Thr Cys Gly Asp Ile Val Leu Thr Gln Ser Pro Asp Ser Leu Ala
20 25 30

gta agc tta gga gag agg gcc act att agc tgc aaa tcc agt cag agt
144

Val Ser Leu Gly Glu Arg Ala Thr Ile Ser Cys Lys Ser Ser Gln Ser
35 40 45

ctg ctc aac agt aga acc cga gag aac tac ttg gct tgg tac cag cag
192

Leu Leu Asn Ser Arg Thr Arg Glu Asn Tyr Leu Ala Trp Tyr Gln Gln
50 55 60

aaa cca ggg cag cct cct aaa ctg ctg atc tac tgg gca tcc act agg
240

Lys Pro Gly Gln Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg
65 70 75 80

gaa tct ggg gtc cct gat cgc ttc agt ggc agt gga tct ggg aca gat
288

Glu Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp
85 90 95

ttc act ctc acc atc agc agt ctg cag gct gaa gac gtg gca gtt tat
336

Phe Thr Leu Thr Ile Ser Ser Leu Gln Ala Glu Asp Val Ala Val Tyr
100 105 110

tac tgc acg caa tct tat aat ctt tac acg ttc gga cag ggg acc aag
384

Tyr Cys Thr Gln Ser Tyr Asn Leu Tyr Thr Phe Gly Gln Gly Thr Lys
115 120 125

gtg gaa ata aaa
396
Val Glu Ile Lys
130

<210> 8
<211> 132
<212> PRT
<213> Humanized murine anti-human B7-2 light chain

<400> 8

Met Asp Ser Gln Ala Gln Val Leu Ile Leu Leu Leu Leu Trp Val Ser
1 5 10 15

Gly Thr Cys Gly Asp Ile Val Leu Thr Gln Ser Pro Asp Ser Leu Ala
20 25 30

Val Ser Leu Gly Glu Arg Ala Thr Ile Ser Cys Lys Ser Ser Gln Ser
35 40 45

Leu Leu Asn Ser Arg Thr Arg Glu Asn Tyr Leu Ala Trp Tyr Gln Gln
50 55 60

Lys Pro Gly Gln Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg
65 70 75 80

Glu Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp
85 90 95

Phe Thr Leu Thr Ile Ser Ser Leu Gln Ala Glu Asp Val Ala Val Tyr
100 105 110

Tyr Cys Thr Gln Ser Tyr Asn Leu Tyr Thr Phe Gly Gln Gly Thr Lys
115 120 125

Val Glu Ile Lys
130

<210> 9
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<212> DNA
<213> Artificial Sequence

<220>
<221> CDS
<222> (1)..(15)
<223> CDR1 of humanized murine anti-human B7-2 heavy chain

<400> 9
gat tat gct ata cag
15
Asp Tyr Ala Ile Gln
1 5

<210> 10
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR1 of humanized murine anti-human B7-2 heavy chain

<400> 10

Asp Tyr Ala Ile Gln
1 5

<210> 11
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR2 of humanized murine anti-human B7-2 heavy chain

<221> CDS
<222> (1)..(51)

<400> 11
gtt att aat att tac tat gat aat aca aac tac aac cag aag ttt aag
48
Val Ile Asn Ile Tyr Tyr Asp Asn Thr Asn Tyr Asn Gln Lys Phe Lys
1 5 10 15

ggc
51
Gly

<210> 12
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR2 of humanized murine anti-human B7-2 heavy chain

<400> 12
Val Ile Asn Ile Tyr Tyr Asp Asn Thr Asn Tyr Asn Gln Lys Phe Lys
1 5 10 15

Gly

<210> 13
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 of humanized murine anti-human B7-2 heavy chain

<221> CDS
<222> (1)..(21)

<400> 13
gcg gcc tgg tat atg gac tac
21
Ala Ala Trp Tyr Met Asp Tyr
1 5

<210> 14
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR3 of humanized murine anti-human B7-2 heavy chain

<400> 14

Ala Ala Trp Tyr Met Asp Tyr
1 5

<210> 15
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR1 of humanized murine anti-human B7-2 light chain

<221> CDS
<222> (1)..(51)

<400> 15
aaa tcc agt cag agt ctg ctc aac agt aga acc cga gag aac tac ttg
48
Lys Ser Ser Gln Ser Leu Leu Asn Ser Arg Thr Arg Glu Asn Tyr Leu
1 5 10 15

gct
51
Ala

<210> 16
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR1 of humanized murine anti-human B7-2 light chain

<400> 16

Lys Ser Ser Gln Ser Leu Leu Asn Ser Arg Thr Arg Glu Asn Tyr Leu
1 5 10 15

Ala

<210> 17
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR2 of humanized murine anti-human B7-2 light chain

<221> CDS
<222> (1)..(21)

<400> 17
tgg gca tcc act agg gaa tct
21
Trp Ala Ser Thr Arg Glu Ser
1 5

<210> 18
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR2 of humanized murine anti-human B7-2 light chain

<400> 18

Trp Ala Ser Thr Arg Glu Ser
1 5

<210> 19
<211> 24
<212> DNA
<213> Artificial Sequence

<220>

<223> CDR3 of humanized murine anti-human B7-2 light chain

<221> CDS

<222> (1)..(24)

<400> 19

acg caa tct tat aat ctt tac acg

24

Thr Gln Ser Tyr Asn Leu Tyr Thr

1

5

<210> 20

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> CDR3 of humanized murine anti-human B7-2 light chain

<400> 20

Thr Gln Ser Tyr Asn Leu Tyr Thr

1

5

<210> 21

<211> 405

<212> DNA

<213> Murine sp.

<220>

<221> CDS

<222> (1)..(405)

<223> Anti-B7-2 heavy chain

<400> 21

atg ggt tgg aac tgt atc atc ttc ttt ctg gtt aca aca gct aca ggt

48

Met Gly Trp Asn Cys Ile Ile Phe Phe Leu Val Thr Thr Ala Thr Gly

1

5

10

15

gtg cac tcc cag gtc cag ctg cag cag tct ggg cct gag ctg gtg agg

96

Val His Ser Gln Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Arg

20

25

30

cct ggg gaa tca gtg aag att tcc tgc aag ggt tcc ggc tac aca ttc
144

Pro Gly Glu Ser Val Lys Ile Ser Cys Lys Gly Ser Gly Tyr Thr Phe
35 40 45

act gat tat gct ata cag tgg gtg aag cag agt cat gca aag agt cta
192

Thr Asp Tyr Ala Ile Gln Trp Val Lys Gln Ser His Ala Lys Ser Leu
50 55 60

gag tgg att gga gtt att aat att tac tat gat aat aca aac tac aac
240

Glu Trp Ile Gly Val Ile Asn Ile Tyr Tyr Asp Asn Thr Asn Tyr Asn
65 70 75 80

cag aag ttt aag ggc aag gcc aca atg act gta gac aaa tcc tcc agc
288

Gln Lys Phe Lys Gly Lys Ala Thr Met Thr Val Asp Lys Ser Ser Ser
85 90 95

aca gcc tat atg gaa ctt gcc aga ttg aca tct gag gat tct gcc atc
336

Thr Ala Tyr Met Glu Leu Ala Arg Leu Thr Ser Glu Asp Ser Ala Ile
100 105 110

tat tac tgt gca aga gcg gcc tgg tat atg gac tac tgg ggt caa gga
384

Tyr Tyr Cys Ala Arg Ala Ala Trp Tyr Met Asp Tyr Trp Gly Gln Gly
115 120 125

acc tca gtc acc gtc tcc tca
405

Thr Ser Val Thr Val Ser Ser
130 135

<210> 22

<211> 135

<212> PRT

<213> Murine sp.

<220>

<223> Anti-B7-2 heavy chain

<400> 22

Met Gly Trp Asn Cys Ile Ile Phe Phe Leu Val Thr Thr Ala Thr Gly
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 Val His Ser Gln Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Arg
 20 25 30
 Pro Gly Glu Ser Val Lys Ile Ser Cys Lys Gly Ser Gly Tyr Thr Phe
 35 40 45
 Thr Asp Tyr Ala Ile Gln Trp Val Lys Gln Ser His Ala Lys Ser Leu
 50 55 60
 Glu Trp Ile Gly Val Ile Asn Ile Tyr Tyr Asp Asn Thr Asn Tyr Asn
 65 70 75 80
 Gln Lys Phe Lys Gly Lys Ala Thr Met Thr Val Asp Lys Ser Ser Ser
 85 90 95
 Thr Ala Tyr Met Glu Leu Ala Arg Leu Thr Ser Glu Asp Ser Ala Ile
 100 105 110
 Tyr Tyr Cys Ala Arg Ala Ala Trp Tyr Met Asp Tyr Trp Gly Gln Gly
 115 120 125
 Thr Ser Val Thr Val Ser Ser
 130 135

<210> 23
 <211> 396
 <212> DNA
 <213> Murine sp.

<220>
 <221> CDS
 <222> (1)..(396)
 <223> Anti-B7-2 light chain

<400> 23
 atg gat tca cag gcc cag gtt ctt ata ttg ctg ctg cta tgg gta tct
 48
 Met Asp Ser Gln Ala Gln Val Leu Ile Leu Leu Leu Trp Val Ser
 1 5 10 15
 ggt acc tgt ggg gac att gtg ctg tca cag tct cca tcc tcc ctg gct
 96

Gly Thr Cys Gly Asp Ile Val Leu Ser Gln Ser Pro Ser Ser Leu Ala
 20 25 30

gtg tca gca gga gag aag gtc act atg agc tgc aaa tcc agt cag agt
 144

Val Ser Ala Gly Glu Lys Val Thr Met Ser Cys Lys Ser Ser Gln Ser
 35 40 45

ctg ctc aac agt aga acc cga gag aac tac ttg gct tgg tac cag cag
 192

Leu Leu Asn Ser Arg Thr Arg Glu Asn Tyr Leu Ala Trp Tyr Gln Gln
 50 55 60

aaa cca ggg cag tct cct aaa ctg ctg atc tac tgg gca tcc act agg
 240

Lys Pro Gly Gln Ser Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg
 65 70 75 80

gaa tct ggg gtc cct gat cgc ttc aca ggc agt gga tct ggg aca gat
 288

Glu Ser Gly Val Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp
 85 90 95

ttc act ctc acc atc agc agt gtg cag gct gaa gac ctg gca gtt tat
 336

Phe Thr Leu Thr Ile Ser Ser Val Gln Ala Glu Asp Leu Ala Val Tyr
 100 105 110

tac tgc acg caa tct tat aat ctt tac acg ttc gga ggg ggg acc aag
 384

Tyr Cys Thr Gln Ser Tyr Asn Leu Tyr Thr Phe Gly Gly Gly Thr Lys
 115 120 125

ctg gaa ata aaa
 396

Leu Glu Ile Lys
 130

<210> 24
 <211> 132
 <212> PRT
 <213> Murine sp.

<220>
 <223> Anti-B7-2 light chain

<400> 24

Met Asp Ser Gln Ala Gln Val Leu Ile Leu Leu Leu Trp Val Ser
1 5 10 15

Gly Thr Cys Gly Asp Ile Val Leu Ser Gln Ser Pro Ser Ser Leu Ala
20 25 30

Val Ser Ala Gly Glu Lys Val Thr Met Ser Cys Lys Ser Ser Gln Ser
35 40 45

Leu Leu Asn Ser Arg Thr Arg Glu Asn Tyr Leu Ala Trp Tyr Gln Gln
50 55 60

Lys Pro Gly Gln Ser Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg
65 70 75 80

Glu Ser Gly Val Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp
85 90 95

Phe Thr Leu Thr Ile Ser Ser Val Gln Ala Glu Asp Leu Ala Val Tyr
100 105 110

Tyr Cys Thr Gln Ser Tyr Asn Leu Tyr Thr Phe Gly Gly Gly Thr Lys
115 120 125

Leu Glu Ile Lys
130

<210> 25

<211> 405

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Humanized
murine anti-human B7-2 heavy chain

<220>

<221> CDS

<222> (1)..(405)

<400> 25

atg ggt tgg aac tgt atc atc ttc ttt ctg gtt acc aca gct aca ggt
48

Met Gly Trp Asn Cys Ile Ile Phe Phe Leu Val Thr Thr Ala Thr Gly
1 5 10 15

gtg cac tcc cag gtc cag ctg gtg cag tct ggg gct gag gtg aag aag
96

Val His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
20 25 30

cct ggg agc tca gtg aag gtg tcc tgc aaa gct tcc ggc tac aca ttc
144

Pro Gly Ser Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
35 40 45

act gat tat gct ata cag tgg gtg aga cag gct cct gga cag ggc ctc
192

Thr Asp Tyr Ala Ile Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
50 55 60

gag tgg att gga gtt att aat att tac tat gat aat aca aac tac aac
240

Glu Trp Ile Gly Val Ile Asn Ile Tyr Tyr Asp Asn Thr Asn Tyr Asn
65 70 75 80

cag aag ttt aag ggc aag gcc aca atg act gta gac aag tcg acg agc
288

Gln Lys Phe Lys Gly Lys Ala Thr Met Thr Val Asp Lys Ser Thr Ser
85 90 95

aca gcc tat atg gaa ctt agt tct ttg aga tct gag gat acg gcc gtt
336

Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
100 105 110

tat tac tgt gca aga gcg gcc tgg tat atg gac tac tgg ggt caa ggt
384

Tyr Tyr Cys Ala Arg Ala Ala Trp Tyr Met Asp Tyr Trp Gly Gln Gly
115 120 125

acc ctt gtc acc gtc tcc tca
405

Thr Leu Val Thr Val Ser Ser
130 135

<210> 26

<211> 135

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Humanized
murine anti-human B7-2 heavy chain

<400> 26

Met Gly Trp Asn Cys Ile Ile Phe Phe Leu Val Thr Thr Ala Thr Gly
1 5 10 15

Val His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
20 25 30

Pro Gly Ser Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
35 40 45

Thr Asp Tyr Ala Ile Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
50 55 60

Glu Trp Ile Gly Val Ile Asn Ile Tyr Tyr Asp Asn Thr Asn Tyr Asn
65 70 75 80

Gln Lys Phe Lys Gly Lys Ala Thr Met Thr Val Asp Lys Ser Thr Ser
85 90 95

Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
100 105 110

Tyr Tyr Cys Ala Arg Ala Ala Trp Tyr Met Asp Tyr Trp Gly Gln Gly
115 120 125

Thr Leu Val Thr Val Ser Ser
130 135

<210> 27

<211> 396

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Humanized
murine anti-human B7-2 light chain

<220>

<221> CDS

<222> (1)..(396)

<400> 27

atg gat tca cag gcc cag gtt ctt ata ttg ctg ctg cta tgg gta tct
 48
 Met Asp Ser Gln Ala Gln Val Leu Ile Leu Leu Leu Trp Val Ser
 1 5 10 15

ggc acc tgt ggg gac att gtg ctg aca cag tct cca gat tcc ctg gct
 96
 Gly Thr Cys Gly Asp Ile Val Leu Thr Gln Ser Pro Asp Ser Leu Ala
 20 25 30

gta agc tta gga gag agg gcc act att agc tgc aaa tcc agt cag agt
 144
 Val Ser Leu Gly Glu Arg Ala Thr Ile Ser Cys Lys Ser Ser Gln Ser
 35 40 45

ctg ctc aac agt aga acc cga gag aac tac ttg gct tgg tac cag cag
 192
 Leu Leu Asn Ser Arg Thr Arg Glu Asn Tyr Leu Ala Trp Tyr Gln Gln
 50 55 60

aaa cca ggg cag cct cct aaa ctg ctg atc tac tgg gca tcc act agg
 240
 Lys Pro Gly Gln Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg
 65 70 75 80

gaa tct ggg gtc cct gat cgc ttc agt ggc agt gga tct ggg aca gat
 288
 Glu Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp
 85 90 95

ttc act ctc acc atc agc agt ctg cag gct gaa gac gtg gca gtt tat
 336
 Phe Thr Leu Thr Ile Ser Ser Leu Gln Ala Glu Asp Val Ala Val Tyr
 100 105 110

tac tgc acg caa tct tat aat ctt tac acg ttc gga cag ggg acc aag
 384
 Tyr Cys Thr Gln Ser Tyr Asn Leu Tyr Thr Phe Gly Gln Gly Thr Lys
 115 120 125

gtg gaa ata aaa
 396
 Val Glu Ile Lys
 130

<210> 28

<211> 132
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Humanized
murine anti-human B7-2 light chain

<400> 28

Met Asp Ser Gln Ala Gln Val Leu Ile Leu Leu Leu Trp Val Ser
1 5 10 15

Gly Thr Cys Gly Asp Ile Val Leu Thr Gln Ser Pro Asp Ser Leu Ala
20 25 30

Val Ser Leu Gly Glu Arg Ala Thr Ile Ser Cys Lys Ser Ser Gln Ser
35 40 45

Leu Leu Asn Ser Arg Thr Arg Glu Asn Tyr Leu Ala Trp Tyr Gln Gln
50 55 60

Lys Pro Gly Gln Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg
65 70 75 80

Glu Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp
85 90 95

Phe Thr Leu Thr Ile Ser Ser Leu Gln Ala Glu Asp Val Ala Val Tyr
100 105 110

Tyr Cys Thr Gln Ser Tyr Asn Leu Tyr Thr Phe Gly Gln Gly Thr Lys
115 120 125

Val Glu Ile Lys
130

<210> 29

<211> 15

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CDR1 of
humanized murine anti-human B7-2 heavy chain

<220>

<221> CDS
<222> (1)..(15)

<400> 29
gat tat gct ata cag
15
Asp Tyr Ala Ile Gln
1 5

<210> 30
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CDR1 of humanized
murine anti-human B7-2 heavy chain

<400> 30
Asp Tyr Ala Ile Gln
1 5

<210> 31
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CDR2 of
humanized murine anti-human B7-2 heavy chain

<220>
<221> CDS
<222> (1)..(51)

<400> 31
gtt att aat att tac tat gat aat aca aac tac aac cag aag ttt aag
48
Val Ile Asn Ile Tyr Tyr Asp Asn Thr Asn Tyr Asn Gln Lys Phe Lys
1 5 10 15

ggc
51
Gly

<210> 32
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CDR2 of humanized
murine anti-human B7-2 heavy chain

<400> 32
Val Ile Asn Ile Tyr Tyr Asp Asn Thr Asn Tyr Asn Gln Lys Phe Lys
1 5 10 15

Gly

<210> 33
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CDR3 of
humanized murine anti-human B7-2 heavy chain

<220>
<221> CDS
<222> (1)..(21)

<400> 33
gcg gcc tgg tat atg gac tac
21
Ala Ala Trp Tyr Met Asp Tyr
1 5

<210> 34
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CDR3 of humanized
murine anti-human B7-2 heavy chain

<400> 34

Ala Ala Trp Tyr Met Asp Tyr
1 5

<210> 35

<211> 51

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CDR1 of
humanized murine anti-human B7-2 light chain

<220>

<221> CDS

<222> (1)..(51)

<400> 35

aaa tcc agt cag agt ctg ctc aac agt aga acc cga gag aac tac ttg
48

Lys Ser Ser Gln Ser Leu Leu Asn Ser Arg Thr Arg Glu Asn Tyr Leu
1 5 10 15

gct
51
Ala

<210> 36

<211> 17

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CDR1 of humanized
murine anti-human B7-2 light chain

<400> 36

Lys Ser Ser Gln Ser Leu Leu Asn Ser Arg Thr Arg Glu Asn Tyr Leu
1 5 10 15

Ala

<210> 37

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CDR2 of
humanized murine anti-human B7-2 light chain

<220>

<221> CDS

<222> (1)..(21)

<400> 37

tgg gca tcc act agg gaa tct

21

Trp Ala Ser Thr Arg Glu Ser

1

5

<210> 38

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CDR2 of humanized
murine anti-human B7-2 light chain

<400> 38

Trp Ala Ser Thr Arg Glu Ser

1

5

<210> 39

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CDR3 of
humanized murine anti-human B7-2 light chain

<220>

<221> CDS

<222> (1)..(24)

<400> 39

acg caa tct tat aat ctt tac acg

24

Thr Gln Ser Tyr Asn Leu Tyr Thr
1 5

<210> 40

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CDR3 of humanized
murine anti-human B7-2 light chain

<400> 40

Thr Gln Ser Tyr Asn Leu Tyr Thr
1 5

<210> 41

<211> 1960

<212> DNA

<213> Mus sp.

<220>

<221> CDS

<222> (12)..(408)

<220>

<221> CDS

<222> (768)..(1087)

<400> 41

tctagaccac c atg gat tca cag gcc cag gtt ctt ata ttg ctg ctg cta
50

Met Asp Ser Gln Ala Gln Val Leu Ile Leu Leu Leu
1 5 10

tggtga tct ggc acc tgt ggg gac att gtg ctg aca cag tct cca gat
98

Trp Val Ser Gly Thr Cys Gly Asp Ile Val Leu Thr Gln Ser Pro Asp
15 20 25

tcc ctg gct gta agc tta gga gag agg gcc act att agc tgc aaa tcc
146

Ser Leu Ala Val Ser Leu Gly Glu Arg Ala Thr Ile Ser Cys Lys Ser
30 35 40 45

agt cag agt ctg ctc aac agt aga acc cga gag aac tac ttg gct tgg
194
Ser Gln Ser Leu Leu Asn Ser Arg Thr Arg Glu Asn Tyr Leu Ala Trp
50 55 60

tac cag cag aaa cca ggg cag cct cct aaa ctg ctg atc tac tgg gca
242
Tyr Gln Gln Lys Pro Gly Gln Pro Pro Lys Leu Leu Ile Tyr Trp Ala
65 70 75

tcc act agg gaa tct ggg gtc cct gat cgc ttc agt ggc agt gga tct
290
Ser Thr Arg Glu Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser
80 85 90

ggg aca gat ttc act ctc acc atc agc agt ctg cag gct gaa gac gtg
338
Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Ala Glu Asp Val
95 100 105

gca gtt tat tac tgc agc caa tct tat aat ctt tac acg ttc gga cag
386
Ala Val Tyr Tyr Cys Ser Gln Ser Tyr Asn Leu Tyr Thr Phe Gly Gln
110 115 120 125

ggg acc aag gtg gaa ata aaa c gtaagtagtc ttctcaactc tagaaattct
438
Gly Thr Lys Val Glu Ile Lys
130

aaactctgag ggggtcggat gacgtggcca ttctttgcct aaagcattga gtttactgca
498

aggtcagaaa agcatgcaaa gccctcagaa tggctgcaaa gagctccaac aaaacaattt
558

agaactttat taaggaatag ggggaagcta ggaagaaact caaaacatca agattttaaa
618

tacgcttctt ggtctccttg ctataattat ctgggataag catgctgttt tctgtctgtc
678

cctaacatgc cctgtgatta tccgcaaaaca acacacccaa gggcagaact ttgttactta
738

aacaccatcc tgtttgcttc tttcctcag ga act gtg gct gca cca tct gtc
790

Arg Thr Val Ala Ala Pro Ser Val
135 140

ttc atc ttc cgc cca tct gat gag cag ttg aaa tct gga act gcc tct
838

Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly Thr Ala Ser
145 150 155

gtt gtg tgc ctg ctg aat aac ttc tat ccc aga gag gcc aaa gta cag
886

Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala Lys Val Gln
160 165 170

tgg aag gtg gat aac gcc ctc caa tcg ggt aac tcc cag gag agt gtc
934

Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln Glu Ser Val
175 180 185

aca gag cag gac agc aag gac agc acc tac agc ctc agc agc acc ctg
982

Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser Ser Thr Leu
190 195 200

acg ctg agc aaa gca gac tac gag aaa cac aaa gtc tac gcc tgc gaa
1030

Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val Tyr Ala Cys Glu
205 210 215 220

gtc acc cat cag ggc ctg agc tcg ccc gtc aca aag agc ttc aac agg
1078

Val Thr His Gln Gly Leu Ser Ser Pro Val Thr Lys Ser Phe Asn Arg
225 230 235

gga gag tgt tagaggaga agtgccccc cctgctcctc agttccagcc
1127

Gly Glu Cys

tgacccccc ccatcctttg gcctctgacc ctttttccac aggggaccta ccctattgc
1187

ggctcctcag ctcatctttc acctcaccac cctcctcctc cttggcttta attatgctaa
1247

tgttgaggga gaatgaataa ataaagttaa tctttgcacc tgttggtttct ctctttcctc
1307

atttaataat tattatctgt tgttttacca actactcaat ttctcttata agggactaaa
1367

tatgtagtca tcctaaggcg cataaccatt tataaaaaatc atccttcatt ctattttacc
1427

ctatcatcct ctgcaagaca gtccctccctc aaaccacaaa gccttctgtc ctcacagtcc
1487

cctgggccaat ggtaggagag acttgcttcc ttgttttccc ctccctcagca agccctcata
1547

gtccttttta agggtgacag gtcttacagt catatatcct ttgattcaat tccctgggaa
1607

tcaaccaaag caaatTTTTT aaaagaagaa acctgctata aagagaatca ttcatgcaa
1667

catgatataa aataacaaca caataaaagc aattaaataa acaacaata gggaaatgtt
1727

taagttcatc atggctactta gacttaatgg aatgtcatgc cttatttaca tttttaaaca
1787

ggtagtgagg gactcctgtc tgccaagggc cgtattgagt actttccaca acctaattta
1847

atccacacta tactgtgaga ttaaaaacat tcattaaaat gttgcaaagg ttctataaag
1907

ctgagagaca aatatattct ataactcagc aatcccactt ctaggatcaa ttc
1960

<210> 42

<211> 239

<212> PRT

<213> Mus sp.

<400> 42

Met Asp Ser Gln Ala Gln Val Leu Ile Leu Leu Leu Trp Val Ser
1 5 10 15

Gly Thr Cys Gly Asp Ile Val Leu Thr Gln Ser Pro Asp Ser Leu Ala
20 25 30

Val	Ser	Leu	Gly	Glu	Arg	Ala	Thr	Ile	Ser	Cys	Lys	Ser	Ser	Gln	Ser	
		35					40					45				
Leu	Leu	Asn	Ser	Arg	Thr	Arg	Glu	Asn	Tyr	Leu	Ala	Trp	Tyr	Gln	Gln	
	50					55					60					
Lys	Pro	Gly	Gln	Pro	Pro	Lys	Leu	Leu	Ile	Tyr	Trp	Ala	Ser	Thr	Arg	
65					70					75					80	
Glu	Ser	Gly	Val	Pro	Asp	Arg	Phe	Ser	Gly	Ser	Gly	Ser	Gly	Thr	Asp	
				85					90					95		
Phe	Thr	Leu	Thr	Ile	Ser	Ser	Leu	Gln	Ala	Glu	Asp	Val	Ala	Val	Tyr	
			100					105						110		
Tyr	Cys	Ser	Gln	Ser	Tyr	Asn	Leu	Tyr	Thr	Phe	Gly	Gln	Gly	Thr	Lys	
		115					120					125				
Val	Glu	Ile	Lys	Arg	Thr	Val	Ala	Ala	Pro	Ser	Val	Phe	Ile	Phe	Pro	
	130					135					140					
Pro	Ser	Asp	Glu	Gln	Leu	Lys	Ser	Gly	Thr	Ala	Ser	Val	Val	Cys	Leu	
145					150					155					160	
Leu	Asn	Asn	Phe	Tyr	Pro	Arg	Glu	Ala	Lys	Val	Gln	Trp	Lys	Val	Asp	
				165					170					175		
Asn	Ala	Leu	Gln	Ser	Gly	Asn	Ser	Gln	Glu	Ser	Val	Thr	Glu	Gln	Asp	
		180						185					190			
Ser	Lys	Asp	Ser	Thr	Tyr	Ser	Leu	Ser	Ser	Thr	Leu	Thr	Leu	Ser	Lys	
		195					200					205				
Ala	Asp	Tyr	Glu	Lys	His	Lys	Val	Tyr	Ala	Cys	Glu	Val	Thr	His	Gln	
	210					215					220					
Gly	Leu	Ser	Ser	Pro	Val	Thr	Lys	Ser	Phe	Asn	Arg	Gly	Glu	Cys		
225					230					235						

<210> 43

<211> 2249

<212> DNA

<213> Mus sp.

<220>

<221> CDS
<222> (12)..(417)

<220>
<221> CDS
<222> (655)..(948)

<220>
<221> CDS
<222> (1341)..(1376)

<220>
<221> CDS
<222> (1495)..(1821)

<220>
<221> CDS
<222> (1919)..(2238)

<400> 43
tctagaccac c atg ggt tgg aac tgt atc atc ttc ttt ctg gtt acc aca
50

Met Gly Trp Asn Cys Ile Ile Phe Phe Leu Val Thr Thr
1 5 10

gct aca ggt gtg cac tcc cag gtc cag ctg gtg cag tct ggg gct gag
98

Ala Thr Gly Val His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu
15 20 25

gtg aag aag cct ggg agc tca gtg aag gtg tcc tgc aaa gct tcc ggc
146

Val Lys Lys Pro Gly Ser Ser Val Lys Val Ser Cys Lys Ala Ser Gly
30 35 40 45

tac aca ttc act gat tat gct ata cag tgg gtg aga cag gct cct gga
194

Tyr Thr Phe Thr Asp Tyr Ala Ile Gln Trp Val Arg Gln Ala Pro Gly
50 55 60

cag ggc ctc gag tgg att gga gtt att aat att tac tat gat aat aca
242

Gln Gly Leu Glu Trp Ile Gly Val Ile Asn Ile Tyr Tyr Asp Asn Thr
65 70 75

aac tac aac cag aag ttt aag ggc aag gcc aca atg act gta gac aag
290

Asn Tyr Asn Gln Lys Phe Lys Gly Lys Ala Thr Met Thr Val Asp Lys
80 85 90

tcg acg agc aca gcc tat atg gaa ctt agt tct ttg aga tct gag gat
338

Ser Thr Ser Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp
95 100 105

acg gcc gtt tat tac tgt gca aga gcg gcc tgg tat atg gac tac tgg
386

Thr Ala Val Tyr Tyr Cys Ala Arg Ala Ala Trp Tyr Met Asp Tyr Trp
110 115 120 125

ggc caa ggt acc ctt gtc acc gtc tcc tca g gtgagtcctt aaaacctcta
437

Gly Gln Gly Thr Leu Val Thr Val Ser Ser
130 135

gagctttctg gggcgagccg ggccctgactt tggctttggg gcagggagtg ggctaagggtg
497

aggcaggtgg cgccagccag gtgcacaccc aatgcccgtg agcccagaca ctggaccctg
557

cctggaccct cgtggataga caagaaccga ggggcctctg cgccctgggc ccagctctgt
617

cccacaccgc ggtcacatgg caccacctct cttgcag cc tcc acc aag ggc cca
671

Ala Ser Thr Lys Gly Pro
140

tcg gtc ttc ccc ctg gcg ccc tgc tcc agg agc acc tcc gag agc aca
719

Ser Val Phe Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu Ser Thr
145 150 155

gcg gcc ctg ggc tgc ctg gtc aag gac tac ttc ccc gaa ccg gtg acg
767

Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr
160 165 170

gtg tcg tgg aac tca ggc gct ctg acc agc ggc gtg cac acc ttc cca
815

Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro
175 180 185

gct gtc cta cag tcc tca gga ctc tac tcc ctc agc agc gtg gtg acc
863
Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr
190 195 200 205

gtg ccc tcc agc aac ttc ggc acc cag acc tac acc tgc aac gta gat
911
Val Pro Ser Ser Asn Phe Gly Thr Gln Thr Tyr Thr Cys Asn Val Asp
210 215 220

cac aag ccc agc aac acc aag gtg gac aag aca gtt g gtgagaggcc
958
His Lys Pro Ser Asn Thr Lys Val Asp Lys Thr Val
225 230

agctcagggg gggaggggtgt ctgctggaag ccaggctcag cctcctgcc tggacgcacc
1018

ccggctgtgc agccccagcc cagggcagca aggcaggccc catctgtctc ctcaccggga
1078

ggcctctgcc cgccccactc atgctcaggg agagggctctt ctggcttttt ccaccaggct
1138

ccaggcaggc acaggctggg tgccccctacc ccaggccctt cacacacagg ggcagggtgct
1198

tggtcagac ctgccccaaag ccatatccg gaggaccctg cccctgacct aagccgaccc
1258

caaaggccaa actgtccact ccctcagctc ggacaccttc tctcctccca gatccgagta
1318

actcccaatc ttctctctgc ag ag cgc aaa tgt tgt gtc gag tgc cca ccg
1369
Glu Arg Lys Cys Cys Val Glu Cys Pro Pro
235 240

tgc cca g gtaagccagc ccaggcctcg ccctccagct caaggcggga caggtgccct
1426
Cys Pro
245

agagtagcct gcatccaggg acaggcccca gctgggtgct gacacgtcca cctccatctc
1486

ttcctcag ca cca cct gcg gca gca ccg tca gtc ttc ctc ttc ccc cca
1535

Ala Pro Pro Ala Ala Ala Pro Ser Val Phe Leu Phe Pro Pro
250 255

aaa ccc aag gac acc ctc atg atc tcc cgg acc cct gag gtc acg tgc
1583

Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys
260 265 270 275

gtg gtg gtg gac gtg agc cac gaa gac ccc gag gtc cag ttc aac tgg
1631

Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Gln Phe Asn Trp
280 285 290

tac gtg gac ggc gtg gag gtg cat aat gcc aag aca aag cca cgg gag
1679

Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu
295 300 305

gag cag ttc aac agc acg ttc cgt gtg gtc agc gtc ctc acc gtt gtg
1727

Glu Gln Phe Asn Ser Thr Phe Arg Val Val Ser Val Leu Thr Val Val
310 315 320

cac cag gac tgg ctg aac ggc aag gag tac aag tgc aag gtc tcc aac
1775

His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn
325 330 335

aaa ggc ctc cca gcc ccc atc gag aaa acc atc tcc aaa acc aaa g
1821

Lys Gly Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Thr Lys
340 345 350

gtgggacccg cggggtatga gggccacatg gacagaggcc ggctcggccc accctctgcc
1881

ctgggagtga ccgctgtgcc aacctctgtc cctacag gg cag ccc cga gaa cca
1935

Gly Gln Pro Arg Glu Pro
355 360

cag gtg tac acc ctg ccc cca tcc cgg gag gag atg acc aag aac cag
1983

Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln
365 370 375

gtc agc ctg acc tgc ctg gtc aaa ggc ttc tac ccc agc gac atc gcc
2031

Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala
380 385 390

gtg gag tgg gag agc aat ggg cag ccg gag aac aac tac aag acc aca
2079

Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr
395 400 405

cct ccc atg ctg gac tcc gac ggc tcc ttc ttc ctc tac agc aag ctc
2127

Pro Pro Met Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu
410 415 420

acc gtg gac aag agc agg tgg cag cag ggg aac gtc ttc tca tgc tcc
2175

Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser
425 430 435 440

gtg atg cat gag gct ctg cac aac cac tac acg cag aag agc ctc tcc
2223

Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser
445 450 455

ctg tcc ccg ggt aaa tgagtgaatt c
2249

Leu Ser Pro Gly Lys
460

<210> 44

<211> 461

<212> PRT

<213> Mus sp.

<400> 44

Met Gly Trp Asn Cys Ile Ile Phe Phe Leu Val Thr Thr Ala Thr Gly
1 5 10 15

Val His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
20 25 30

Pro Gly Ser Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
35 40 45

Thr	Asp	Tyr	Ala	Ile	Gln	Trp	Val	Arg	Gln	Ala	Pro	Gly	Gln	Gly	Leu
	50					55					60				
Glu	Trp	Ile	Gly	Val	Ile	Asn	Ile	Tyr	Tyr	Asp	Asn	Thr	Asn	Tyr	Asn
65					70					75					80
Gln	Lys	Phe	Lys	Gly	Lys	Ala	Thr	Met	Thr	Val	Asp	Lys	Ser	Thr	Ser
				85					90					95	
Thr	Ala	Tyr	Met	Glu	Leu	Ser	Ser	Leu	Arg	Ser	Glu	Asp	Thr	Ala	Val
			100					105					110		
Tyr	Tyr	Cys	Ala	Arg	Ala	Ala	Trp	Tyr	Met	Asp	Tyr	Trp	Gly	Gln	Gly
		115					120					125			
Thr	Leu	Val	Thr	Val	Ser	Ser	Ala	Ser	Thr	Lys	Gly	Pro	Ser	Val	Phe
	130					135					140				
Pro	Leu	Ala	Pro	Cys	Ser	Arg	Ser	Thr	Ser	Glu	Ser	Thr	Ala	Ala	Leu
145					150					155					160
Gly	Cys	Leu	Val	Lys	Asp	Tyr	Phe	Pro	Glu	Pro	Val	Thr	Val	Ser	Trp
				165					170					175	
Asn	Ser	Gly	Ala	Leu	Thr	Ser	Gly	Val	His	Thr	Phe	Pro	Ala	Val	Leu
			180					185					190		
Gln	Ser	Ser	Gly	Leu	Tyr	Ser	Leu	Ser	Ser	Val	Val	Thr	Val	Pro	Ser
		195					200					205			
Ser	Asn	Phe	Gly	Thr	Gln	Thr	Tyr	Thr	Cys	Asn	Val	Asp	His	Lys	Pro
	210					215					220				
Ser	Asn	Thr	Lys	Val	Asp	Lys	Thr	Val	Glu	Arg	Lys	Cys	Cys	Val	Glu
225					230					235					240
Cys	Pro	Pro	Cys	Pro	Ala	Pro	Pro	Ala	Ala	Ala	Pro	Ser	Val	Phe	Leu
				245					250					255	
Phe	Pro	Pro	Lys	Pro	Lys	Asp	Thr	Leu	Met	Ile	Ser	Arg	Thr	Pro	Glu
			260					265					270		
Val	Thr	Cys	Val	Val	Val	Asp	Val	Ser	His	Glu	Asp	Pro	Glu	Val	Gln
		275					280					285			
Phe	Asn	Trp	Tyr	Val	Asp	Gly	Val	Glu	Val	His	Asn	Ala	Lys	Thr	Lys
	290					295					300				

Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Val Val Ser Val Leu
305 310 315 320

Thr Val Val His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys
325 330 335

Val Ser Asn Lys Gly Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys
340 345 350

Thr Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser
355 360 365

Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys
370 375 380

Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln
385 390 395 400

Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Met Leu Asp Ser Asp Gly
405 410 415

Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln
420 425 430

Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn
435 440 445

His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
450 455 460

<210> 45

<211> 327

<212> DNA

<213> Homo sapiens

<400> 45

gacatccaga tgacccagtc tccatcctcc ctgtctgcat ctgtaggaga cagagtcacc
60

atcacttgcc gggcgagtc gggcattagc aattatttag cctggtatca gcagaaacca
120

gggaaagtcc ctaagctcct gatctatgct gcattccactt tgcaatcagg ggtcccatct
180

cggttcagtg gcagtggatc tgggacagat ttcactctca ccatcagcag cctgcagcct
240

gaagatgttg caacttatta ctgtcaaaag tataacagtg cccctccgag tacgttcggc
300

caagggacca aggtggaaat caaacgt
327

<210> 46
<211> 339
<212> DNA
<213> Homo sapiens

<400> 46
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60

atcaactgca agtccagcca gagtgtttta tacagctcca acaacaagaa ttacttaact
120

tgggtaccagc agaaaccagg acagcctcct aagctgctca ttactgggc atctaccgg
180

gaatccgggg tccctgaccg attcagtggc agcgggtctg ggacagattt cactctcacc
240

atcagcagcc tgcaggctga agatgtggca gtttattact gtcagcaata ttatagtact
300

cctcgaacgt tcggccaagg gaccaagtg gaaatcaaa
339

<210> 47
<211> 95
<212> PRT
<213> Homo sapiens

<400> 47

Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1 5 10 15

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Gly Ile Ser Asn Tyr
20 25 30

Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys Val Pro Lys Leu Leu Ile
35 40 45

Tyr Ala Ala Ser Thr Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
65 70 75 80

Glu Asp Val Ala Thr Tyr Tyr Cys Gln Lys Tyr Asn Ser Ala Pro
85 90 95

<210> 48

<211> 101

<212> PRT

<213> Homo sapiens

<400> 48

Asp Ile Gln Leu Thr Gln Ser Pro Asp Ser Leu Ala Val Ser Leu Gly
1 5 10 15

Glu Arg Ala Thr Ile Asn Cys Lys Ser Ser Gln Ser Val Leu Tyr Ser
20 25 30

Ser Asn Asn Lys Tyr Leu Thr Trp Tyr Gln Gln Lys Pro Gly Gln Pro
35 40 45

Pro Lys Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
50 55 60

Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
65 70 75 80

Ile Ser Ser Leu Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys Gln Gln
85 90 95

Tyr Tyr Ser Thr Pro
100

<210> 49
<211> 368
<212> DNA
<213> Homo sapiens

<400> 49
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120

ctggacaagg gcttgagtgg atgggaagga tcatgcctat ccttggacta gcaaattacg
180

cacagaagtt ccagggcaga gtcacgatta ccgcggacaa atccacgagc acagcctaca
240

tggagctgag cagcctgaga tctgaggaca cggccgtgta ttactgtgcg agagatcccg
300

attatgtttg ggggagcgac aactggttcg acccctgggg ccaggggaacc ctgctcatcg
360

tctcctca
368

<210> 50
<211> 358
<212> DNA
<213> Homo sapiens

<400> 50
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tgtgcagcct cggattcacc ttactagga atcctacgag ctgggtacgc caggctccag
120

ggaaggggct ggagtgggtg gttaatataa tggtagtcgg aattgaacca tactatgcgg
180

actctgtgaa gggccgattc accatctcca gaggcaacgc caagaactca ctgtatctgc
240

aaatgaacag cctgagagcc gaggacacgg ccgtgtatta ctgtgcgaga gggatctgtc
300

ttatgacaga ggctactttg actactgggg ccaggaacc ctggtcaccg tctcctca
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<210> 51

<211> 97

<212> PRT

<213> Homo sapiens

<400> 51

Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser Ser
1 5 10 15

Val Lys Val Ser Cys Lys Ala Ser Gly Gly Thr Phe Ser Ser Tyr Thr
20 25 30

Ile Ser Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met Gly
35 40 45

Arg Ile Met Pro Ile Leu Gly Leu Ala Asn Tyr Ala Gln Lys Phe Gln
50 55 60

Gly Arg Val Thr Ile Thr Ala Asp Lys Ser Thr Ser Thr Ala Tyr Met
65 70 75 80

Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr Cys Ala
85 90 95

Arg

<210> 52
<211> 98
<212> PRT
<213> Homo sapiens

<400> 52

Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Lys Pro Gly Gly Ser
1 5 10 15

Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Asp Tyr Tyr
20 25 30

Met Ser Trp Ile Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val Ser
35 40 45

Tyr Ile Ser Ser Arg Gly Ser Glu Thr Ile Tyr Tyr Ala Asp Ser Val
50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr
65 70 75 80

Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95

Ala Arg